

Clean Listing of Claims:

1. (previously presented) A vertebral osteosynthesis device, comprising:

a connecting rod (2); and

at least two bone anchoring elements, each bone anchoring element comprising i) a base part (7) for fixing to a vertebra, and ii) a connecting means (6, 3) for connection to the connecting rod (2), wherein,

the connecting rod (2) is connectable to said connecting means of said bone anchoring elements for fixing to the vertebrae via said base part of said bone anchoring elements,

at least one of said bone anchoring elements (1) is a polyaxial bone anchoring element in which said connection means (6, 3) comprises a connecting part (6) articulated with respect to the base part (7) to be movable in plural planes,

said connecting part (6) of said polyaxial bone anchoring element (1) comprises i) a transversal passage and ii) a rigid transversal part (11), the transversal passage and the rigid transversal part extending in substantially perpendicular directions,

said base part (7) of said polyaxial bone anchoring element comprises i) a transversal passage and

ii) a rigid transversal part (24), the transversal passage and the rigid transversal part extending in substantially perpendicular directions,

said rigid transversal part (11) of the connecting part (6) is inserted in the transversal passage of the base part (7) with the rigid transversal part (11) of the connecting part (6) pivotable in the transversal passage of the base part (7), and

said rigid transversal part (24) of the base part (7) is inserted in the transversal passage of the connecting part (6) with the rigid transversal part (24) of the base part pivotable in the transversal passage of the connecting part (6).

2. (previously presented) The device according to claim 1, wherein said transversal passage and said rigid transversal element (11, 24) of the connecting part (6) and of the base part (7) comprise a ring (11) on the connecting part (6) and a ring (24) on the base part (7), the two rings (11) of the connecting part (6) and the base part (7) being inserted into each other similarly to links in a chain.

3. (previously presented) The device according to claim 1, wherein each rigid transversal element (11, 24) comprises a rounded contact surface with the other rigid transversal element (11, 24), the radius of curvature of said contact surface being greater than the radius of the cross-section of the other rigid transversal element (11, 24).

4. (previously presented) The device according to claim 1, wherein the anchoring element comprises an intermediate part, inserted between said rigid transversal elements (11, 24).

5. (previously presented) The device according to claim 4, wherein the rigid transversal elements are made of a hard material with a low friction coefficient, or comprise a coating, or have undergone a treatment enabling them to have a high hardness and a low friction coefficient on their mutual contact zones, or in that said intermediate part is itself be made of a high hardness and low friction coefficient material.

6. (previously presented) The device according to claim 4, wherein said intermediate part is formed so as to

be retained between both rigid transversal elements by means of the shape of said rigid transversal elements.

7. (previously presented) The device according to claim 1, wherein,

said connecting means further comprising another connecting part (3),

said polyaxial anchoring element (1) further comprises at least one deformable part (16, 37) with an elastically deformable structure, placed between said another connecting part (3) and said base part (7), said deformable part (16, 37) with an elastically deformable structure enabling mobility of said connecting means (6, 3), and therefore enabling mobility of the connecting rod (2), with respect to base part (7), with damping.

8. (previously presented) The device according to claim 7, wherein,

said at least one deformable part (16, 37) comprises a first deformable part (16) with an elastically deformable structure associated with said base part (7), and a second deformable part (37) with an elastically deformable structure associated with said connecting part

(3), said first and second deformable parts (16, 37) bearing one against the other in the assembly position.

9. (previously presented) The device according to claim 1, wherein said connecting part comprises a curved bearing surface, suitable for resting against a corresponding curved bearing surface of said base part and sliding against said surface during movements of said connecting part with respect to said base part.

10. (previously presented) The device according to claim 9, wherein said connecting part comprises a convex peripheral surface, in the form of a spherical cap, and said base part comprises a corresponding concave peripheral surface.

11. (previously presented) The device according to claim 2, wherein each rigid transversal element (11, 24) comprises a rounded contact surface with the other rigid transversal element (11, 24), the radius of curvature of said contact surface being greater than the radius of the cross-section of the other rigid transversal element (11, 24).

12. (previously presented) The device according to claim 2, wherein the anchoring element comprises an intermediate part, inserted between said rigid transversal elements (11, 24).

13. (previously presented) The device according to claim 4, wherein the rigid transversal elements are made of a hard material with a low friction coefficient, or comprise a coating, or have undergone a treatment enabling them to have a high hardness and a low friction coefficient on their mutual contact zones, or in that said intermediate part is itself be made of a high hardness and low friction coefficient material.

14. (previously presented) The device according to claim 5, wherein said intermediate part is particularly formed so as to be retained between both rigid transversal elements by means of the shape of said rigid transversal elements.